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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,365	01/23/2004	James Joseph Hart	06408 USA	7593

23543 7590 06/16/2005

AIR PRODUCTS AND CHEMICALS, INC.
PATENT DEPARTMENT
7201 HAMILTON BOULEVARD
ALLENTOWN, PA 181951501

EXAMINER

JOHNSON, EDWARD M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/763,365

Applicant(s)

HART ET AL.

Examiner

Edward M. Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-20 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-9 and 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woytek et al. US 4,091,081.

Regarding claims 1 and 14, Woytek '081 discloses a method for preparing nitrogen trifluoride comprising removal of HF (see column 5, lines 19-23) and recovering nitrogen trifluoride product.

Woytek fails to disclose removing fluorine and nitrogen oxides.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to remove fluorine and nitrogen oxide because Woytek discloses conversion of fluorine (see Example 5) and oxides of nitrogen or oxygen difluoride as potential starting material (see column 1, lines 25-29 and 35-38), which would obviously, to one of

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ordinary skill, suggest removal of those substances to obtain a purified stream of nitrogen trifluoride product as disclosed.

Regarding claims 2, 4-6, and 16-18, Woytek '081 discloses contact with KOH (see Example 1), which would at least suggest alkaline earth hydroxides including magnesium or calcium hydroxide.

Regarding claim 3, Woytek '081 discloses reaction of fluorine with ammonium acid fluoride (see column 3, line 8).

Regarding claims 8-9, Woytek '081 discloses removal of HF in the product recovery unit (see column 4, lines 30-32).

Regarding claim 12, Woytek '081 discloses condensing the water, which would obviously, to one of ordinary skill, suggest distillation (see column 5, lines 24-26).

Regarding claim 13 and 19-20, Woytek '081 discloses molecular sieve dryers, which would obviously, to one of ordinary skill, suggest carbon molecular sieve (see column 5, lines 26-29).

Regarding claim 15, Woytek '081 discloses 94.1% fluorine conversion, which would at least suggest a balance of 5.9% fluorine.

3. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woytek '081 as applied to claim 4 above, and further in view of Aritsuka et al. US 4,933,158.

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Regarding claims 10-11, Woytek fails to disclose mordenite or chabazite zeolite.

Aritsuka '158 discloses mordenite or chabazite zeolite.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the zeolites of Aritsuka in the nitrogen trifluoride purification process of Woytek because Aritsuka discloses the zeolites in a process for purifying nitrogen trifluoride efficiently and economically with a high adsorbability (see column 2, lines 15-24) and Woytek discloses molecular sieve dryers (see column 5, lines 25-29).

Allowable Subject Matter

4. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not disclose or suggest removing fluorine by contact with calcium or sodium carbonate in the process for the purification of a nitrogen trifluoride stream containing fluorine, hydrogen fluoride, nitrogen oxides, and substantially free of oxygen difluoride of the instant claim 7.

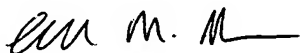
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Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Edward M. Johnson
Examiner
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EMJ